

In The Claims

1.-59. (Cancelled).

60. (New). In a packet modification system for receiving packets, previously classified by a packet classification system, from one or more switch-side devices, modifying the packets to facilitate egress thereof from the packet modification system, and transmitting the modified packets to one or more network-side devices, a packet marker for selectively updating one or more quality of service (QoS) fields in such a modified packet, prior to egress thereof from the packet modification system, comprising:

one or more memories for holding (1) a table associating possible values of the one or more QoS fields of the packet with an index, (2) values of the one or more QoS fields taken from the packet prior to modification thereof by the packet modification system, (3) possible values of the one or more of the QoS fields independent of the table, and (4) one or more egress mark commands; and

a packet marker processor for utilizing a link associated with the packet by the packet classification system to access the one or more egress mark commands stored in the one or more memories, and executing such commands to selectively update the one or more QoS fields of the modified packet;

wherein the packet maker processor, upon executing these commands, individually selects, for each of the one or more QoS fields, the process used for updating the field from amongst at least the following processes:

updating the field using the value of the field taken from the packet prior to modification thereof by the packet modification system as stored in the one or more memories;

updating the field using a value obtained by performing a table lookup operation on the table stored in the one or more memories, using as an index in said operation a value obtained or derived from information associated with the packet by the packet classification system; and

updating the field with one of the values stored in the one or more memories independent of the table.

61. (New) The packet marker of claim 60 wherein the packet has a plurality of QoS fields, and the packet marker individually selects, for each of these plurality of fields, the method of updating the field.

62. (New) The packet marker of claim 61 where the plurality of QoS fields comprises a Virtual Local Area Network (VLAN) VLAN Priority (VPRI) field, a Multilabel Protocol Label Switching (MPLS) Exponent (EXP) field, and an Internet Protocol version 4/version 6 (IPv4/IPv6) Terms of Service (ToS) field.

63. (New) The packet marker of claim 60 wherein the information associated with the packet by the packet classification system from which the index is obtained or derived is egress mark control information associated with the packet by the packet classification system.

64. (New) The packet marker of claim 60 wherein the information associated with the packet by the packet classification system from which the index is obtained or derived is a queue number associated with the packet by the packet classification system.

65. (New) The packet marker of claim 63 wherein the egress mark control information associated with the packet by the packet classification system comprises a select portion and a mask portion, and the index is obtained or derived from the select portion of the egress mark control information.

66. (New) The packet marker of claim 65 wherein the mask portion of the egress mark control information disables one or more of the one or more QoS fields of the modified packet from being updated.

67. (New) The packet marker of claim 65 wherein the mask portion of the egress mark control information enables one or more of the one or more QoS fields of the modified packet to be updated.

68. (New) In a packet modification system for receiving packets, previously classified by a packet classification system, from one or more switch-side devices, modifying the packets to facilitate egress thereof from the packet modification system, and transmitting the modified packets to one or more network-side devices, a packet marker for selectively updating any one or more of Virtual Local Area Network (VLAN) VLAN Priority (VPRI), Multilabel Protocol Label Switching (MPLS) Exponent (EXP), and Internet Protocol version 4/version 6

(IPv4/IPv6) Terms of Service (ToS) quality of service (QoS) fields in such a modified packet, prior to egress thereof from the packet modification system, comprising:

one or more memories for holding (1) a table associating possible values of one or more of the VLAN VPRI, MPLS EXP, and IPv4/IPv6 ToS QoS fields with an index, (2) values of one or more of the VLAN VPRI, MPLS EXP, and IPv4/IPv6 ToS QoS fields taken from the packet prior to modification thereof by the packet modification system, (3) possible values of one or more of the VLAN VPRI, MPLS EXP and IPv4/IPv6 ToS fields independent of the table, and (4) one or more egress mark commands; and

a packet marker processor for utilizing a link associated with the packet by the packet classification system to access the one or more egress mark commands stored in the one or more memories, and executing such commands to selectively update any one or more of the VLAN VPRI, MPLS EXP, and IPv4/IPv6 ToS QoS fields in the packet;

wherein the packet marker processor, upon executing these commands, individually selects, for each of one or more of the VLAN VPRI, MPLS EXP and IPv4/IPv6 ToS fields, the process used for updating the field from amongst at least the following processes:

updating the field using the value of the field taken from the packet prior to modification thereof by the packet modification system as stored in the one or more memories;

updating the field using a value obtained by performing a table lookup operation on the table stored in the one or more memories, using as an index in said operation a value obtained or derived from egress mark control information associated with the packet by the packet classification system; and

updating the field with one of the values stored in the one or more memories independent of the table.

69. (New) The packet marker of claim 68 wherein the egress mark control information associated with the packet by the packet classification system comprises a select portion and a mask portion, and the index is obtained or derived from the select portion of the egress mark control information.

70. (New) The packet marker of claim 69 wherein the mask portion of the egress mark control information disables one or more of the one or more QoS fields of the modified packet from being updated.

71. (New) The packet marker of claim 70 wherein the mask portion of the egress mark control information enables one or more of the one or more QoS fields of the modified packet to be updated.

72. (New) The packet marker of claim 68 where the packet marker processing also selects from the following process when individually selecting the process used for updating each of the VLAN VPRI, MPLS EXP, and IPv4/IPv6 ToS QoS fields of the packet:

updating the field using a value obtained by performing a table lookup operation on the table stored in the one or more memories, using as an index in said operation a value obtained or derived from a queue number associated with the packet by the packet classification system.

73. (New) In a packet modification system for receiving packets, previously classified by a packet classification system, from one or more switch-side devices, modifying the packets to facilitate egress thereof from the packet modification system, and transmitting the modified packets to one or more network-side devices, a method of selectively updating one or more quality of service (QoS) fields in such a modified packet, prior to egress thereof from the packet modification system, comprising:

holding in one or more memories (1) a table associating possible values of the one or more QoS fields of the packet with an index, (2) values of the one or more QoS fields of the packet prior to modification thereof by the packet modification system, (3) possible values of the one or more QoS fields independent of the table, and (4) one or more egress mark commands; and

selectively updating the one or more QoS fields of the packet, comprising individually selecting, for each such field, the process used for updating the field from amongst at least the following processes:

updating the field using the value of the field taken from the packet prior to modification thereof by the packet modification system as stored in the one or more memories;

updating the field using a value obtained by performing a table lookup operation on the table stored in the one or more memories, using as an index in said operation a value obtained or derived from information associated with the packet by the packet classification system; and

updating the field with one of the values stored in the one or more memories independent of the table.

74. (New) The method of claim 73 wherein the packet has a plurality of QoS fields, and the selective updating step comprises individually selecting, for each of these plurality of fields, the process of updating the field.

75. (New) The method of claim 74 where the plurality of QoS fields comprises a Virtual Local Area Network (VLAN) VLAN Priority (VPRi) field, a Multilabel Protocol Label Switching (MPLS) Exponent (EXP) field, and an Internet Protocol version 4/version 6 (IPv4/IPv6) Terms of Service (ToS) field.

76. (New) The method of claim 73 wherein the information associated with the packet by the packet classification system from which the index is obtained or derived is egress mark control information associated with the packet by the packet classification system.

77. (New) The method of claim 73 wherein the information associated with the packet by the packet classification system from which the index is obtained or derived is a queue number associated with the packet by the packet classification system.

78. (New) The method of claim 73 wherein the egress mark control information associated with the packet by the packet classification system comprises a select portion and a mask portion, and the index is obtained or derived from the select portion of the egress mark control information.

79. (New) The method of claim 78 wherein the mask portion of the egress mark control information disables one or more of the one or more QoS fields of the modified packet from being updated.

80. (New) The method of claim 78 wherein the mask portion of the egress mark control information enables one or more of the one or more QoS fields of the modified packet to be updated.